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Upskilling and Reskilling Strategies as a Response to the Optimization of Artificial Intelligence Utilization in Enhancing Human Resource Quality: A Qualitative Study on XYZ Startup Company

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ABSTRACT: This study aims to examine the upskilling and reskilling strategies implemented by Startup XYZ in response to the integration of artificial intelligence (AI) into its operations. A qualitative single-case study design was employed at a technology-based transportation startup in Bali, Indonesia, during the period of February to April 2025. Five informants were purposively selected, consisting of one HR manager, one line manager, and three employees who had participated in training programs. Inclusion criteria required direct involvement in program planning or participation for at least three months. Data were collected through in-depth interviews (45–60 minutes each), observation of two training sessions (±2 hours each), and document reviews, then analyzed using thematic analysis. The findings show that upskilling enhanced technical competencies, particularly in AI-based data analysis and decision-making, while reskilling facilitated transitions from administrative to AI-related roles. Key supporting factors included strong management commitment, collaboration with training partners, digital infrastructure, and employee readiness. However, challenges were identified, including budget constraints, employee resistance, uneven competencies, and conflicts between training schedules and operational workloads. The study concludes that upskilling and reskilling are effective strategies for improving workforce adaptability and competitiveness in small startups. Practically, modular training design, flexible scheduling, and career development pathways are recommended to overcome financial and psychological barriers, providing a scalable model for other startups undergoing AI-driven transformation.

Keywords: Upskilling, Reskilling, Artificial Intelligence, Human Resource Development, Qualitative Study.

INTRODUCTION

The integration of artificial intelligence (AI) into the workplace has fundamentally transformed labor dynamics, shifting from a supportive tool to a primary driver of automation. The growing adoption of AI technologies has contributed to substantial job displacement, particularly among low-skilled workers, while simultaneously creating new opportunities in high-skilled sectors. For instance, (Wang & Lu, 2025) found that AI-induced job loss is especially prevalent among low-

skilled employees, yet it also generates new prospects within technologically advanced industries. Furthermore, (Brynjolfsson et al., 2025) revealed that early-career workers in AI-exposed fields have experienced a 13% decline in employment since 2022 compared to more experienced counterparts. These findings underscore the urgent need for adaptive workforce strategies to mitigate the adverse consequences of automation-based change.

The rapid advancement of AI has significantly reshaped the global labor landscape, redefining competency requirements across multiple industries. Routine and data-driven tasks are increasingly automated by intelligent systems, necessitating a shift from traditional technical expertise toward human-centered competencies such as critical thinking, creativity, empathy, and complex problem-solving. Organizations that fail to adapt risk widening their internal skills gap and losing competitiveness (Morandini et al., 2023). At the same time, employee perceptions and job security remain critical dimensions of workforce sustainability. (Heryanda, 2019) showed that job insecurity significantly increases turnover intention, but this effect can be mitigated when employees experience higher job satisfaction. Economic and technological disruptions increasingly demand organizational adaptability. (Yudiaatmaja & Trianasari, 2023) highlighted how external shocks, such as the collapse of Silicon Valley Bank, significantly disrupted organizational stability and workforce planning. In the context of Startup XYZ, similar external pressures reinforced the urgency of developing workforce adaptability through upskilling and reskilling initiatives to sustain operational resilience. Consequently, it is crucial for organizations to identify and foster transversal skills to ensure workers are equipped to meet the challenges of the AI era. This illustrates how external shocks accelerate organizational demand for workforce adaptability, including the need for rapid reskilling. Research in service industries also demonstrates that perceived value strongly influences satisfaction, which in turn enhances loyalty (Telagawathi et al., 2019). By analogy, employees' perceived value of upskilling programs can significantly impact their satisfaction and commitment to organizational change.

The accelerated rise of automation and machine learning has further altered labor structures across industries. According to (Morandini et al., 2023), AI does not merely replace routine work but also drives demand for advanced strategic skill sets. This transformation necessitates two parallel approaches: upskilling, which enhances existing competencies relevant to current roles, and reskilling, which enables employees to transition into newly emerging positions shaped by technological disruption. According to (Hasan et al., 2024) demonstrated that effective upskilling and reskilling initiatives improve workforce adaptability and overall organizational performance. In the Indonesian context, "Resilience and adaptive capacity of the informal tourism sector depends heavily on local actors' ability to upgrade skills and innovate products" (Widiastini et al., 2023). This shows that upgrading skills is essential not only for high-tech organizations but also for traditional sectors navigating disruption. Thus, investing in skill development is imperative for individuals and organizations seeking to remain relevant and competitive in the AI era.

To remain competitive, modern organizations must design adaptive and sustainable training strategies that empower employees to meet the demands of AI integration and rapid workplace change. Startups, characterized by their agility and innovation, face unique challenges: beyond technological investment, they must cultivate flexible, personalized, and continuous learning

mechanisms to support employee development (Alviani et al., 2024). The study *AI in the Workplace: A Systematic Review of Skill Transformation in the Industry* highlights that firms integrating both technical and soft skills through adaptive learning achieve higher success in implementing AI-based systems. Consequently, traditional, rigid training programs are no longer effective. Companies must instead create dynamic, real-time learning paths that respond to individual needs and technological evolution. Such approaches not only enhance workforce responsiveness but also enable proactive engagement with emerging innovation opportunities. The findings will offer practical recommendations for other companies facing similar challenges, ranging from employee perceptions of AI to the effectiveness of upskilling and reskilling programs. This perspective suggests that empowerment through skill development functions as a universal organizational strategy. While originally discussed in the context of community-based organizations, the same principle is evident in technology-driven startups such as XYZ, where upskilling and reskilling initiatives enhanced employee adaptability and work performance (Suarmanayasa, 2024). This perspective shows that empowerment through upskilling and reskilling can be a vital strategy both in community development and in startup ecosystems adapting to AI.

This study fills an important research gap by offering a qualitative perspective on workforce transitions within AI-affected environments. It complements the predominantly quantitative, macro-level literature on the impact of AI on employment. While prior studies have largely examined the technical implications of AI, limited attention has been paid to how employees and managers perceive and respond to these changes at the organizational level. A qualitative approach is therefore essential to capture their lived experiences, emotional challenges, and informal adaptation strategies. By positioning a dynamic startup, XYZ, as the case study, this research provides in-depth insights into how organizations prepare their workforce to navigate technological disruption effectively. Furthermore, the study offers actionable guidance for startups and policymakers on managing AI-induced skill transitions by strengthening HR development infrastructure and refining managerial strategies.

The objective of this study is to explore how startups implement upskilling and reskilling strategies as adaptive responses to AI integration and automation-based change. Specifically, it seeks to answer the following research questions:

1. How do managers and employees perceive the impact of AI adoption on workforce competencies?
2. What upskilling and reskilling strategies are employed by startups to address these evolving competency requirements?
3. What organizational and contextual factors influence the success of these strategies?

METHOD

This study employed a qualitative method using a single-case study approach focusing on Startup XYZ, a technology-based transportation service company. The primary focus was to analyze upskilling and reskilling strategies implemented as a response to the optimization of artificial intelligence (AI) utilization in enhancing human resource quality. The company's real name has

been anonymized and referred to as Startup XYZ throughout this article to maintain organizational confidentiality and protect informant identities. This method was chosen because it allows for an in-depth understanding of the dynamics of training program implementation, employee experiences, and corporate strategies in anticipating competency shifts driven by AI adoption. According to Fridayana explained tha "*Qualitative research is appropriate when the aim is to understand processes, meanings, and perceptions that cannot be fully captured by quantitative measures*" . Hence, a qualitative single-case design was considered suitable to capture the different perspectives and experiences of managers and employees within the same startup.

The research was conducted at Startup XYZ, a technology-based transportation service company located in Bali, Indonesia. The data collection period spanned February to April 2025.

Informants were selected purposively using the following inclusion criteria:
1. Managers who had direct decision-making authority in HR or operational functions.
2. Employees who had participated in upskilling or reskilling programs for at least three months.
3. Willingness to participate in interviews and share their experiences openly.

Data were gathered through three complementary techniques to ensure a comprehensive understanding of the phenomenon:
1. In-depth interviews with HR managers, line managers, and employees involved in upskilling and reskilling initiatives.
2. Direct observations of training sessions to document real-time practices, participant interactions, and the effectiveness of learning processes.
3. Document analysis of internal company materials, including training modules, evaluation reports, and policy documents related to AI-based competency development.

This combination allowed for the triangulation of data sources, thereby enhancing the credibility Each informant was interviewed once, with the following duration and focus:
- HR Manager and Line Manager: approximately 60 minutes each, focusing on training policy, planning, and managerial perspectives.
- Employees (I3–I5): between 45–50 minutes, focusing on training experiences, challenges, and perceived outcomes.and contextual richness of the findings.

The informants comprised individuals directly engaged in the planning, implementation, and evaluation of the company's upskilling and reskilling programs.

No	Informant Code	Informant Status	Role in the Research
1	I1	HR Manager	Provided insights into training policy and strategic planning
2	I2	Line Manager	Explained competency needs and program execution at the operational level
3	I3	Employee A	Shared experiences from participation in the upskilling program

No	Informant Code	Informant Status	Role in the Research
4	I4	Employee B	Described the reskilling process and its relevance to role transition
5	I5	Employee C	Reflected on the training's impact on job performance and adaptability

Data were analyzed using *thematic analysis* through iterative coding, categorization, and interpretation. Patterns and themes were identified to capture the relationships between managerial initiatives, training practices, and employee experiences. Cross-validation of emerging themes was performed to ensure analytical rigor and minimize researcher bias. This approach provided a comprehensive understanding of how the company responded to AI integration through upskilling and reskilling strategies. "*The Divayana evaluation model is a breakthrough that can be applied to evaluate ICT-based educational services and technology-supported human resource development*" (Divayana, 2020).

Data validity was ensured through source and method triangulation by comparing findings from interviews, observations, and document reviews. Additionally, an audit trail was maintained to ensure transparency throughout the research process, and conducting member checking by confirming interview summaries with informants to ensure interpretation accuracy, from data collection to analysis, thereby strengthening the credibility and trustworthiness of the findings. This supports the triangulation approach in validating context-specific findings.

This study adhered to established ethical research standards. All participants were informed about the research objectives, procedures, and their right to withdraw at any time. Written *informed consent* was obtained prior to participation. Anonymity and confidentiality were maintained throughout the study by using coded identifiers and securely storing all collected data.

RESULT AND DISCUSSION

Overview of XYZ Startup Company

Table 2. Characteristics of XYZ Startup Company

Aspect	Description
Business Field	Operates in technology-based transportation services utilizing artificial intelligence (AI) in its operations and services
Year Established	2019
Number of Employees	35
Organizational Structure	Comprises HR, Product, AI Research, and Operations divisions
Main HR Programs	Upskilling (enhancing technical competencies) and Reskilling (transitioning non-technical competencies to AI-related technical roles)

Aspect	Description
Training Partners	Technology training institutions, partner universities, and global digital platforms

Source: Primary Data, 2025

XYZ Startup, founded in 2019, operates in AI-based transportation services with a lean organizational structure of 35 employees across four divisions. Since its inception, AI has served as the company's operational backbone "*AI is not just a supplement, but the core of our business strategy*" (I1, 2025). Recognizing that human resource quality determines competitiveness, the company introduced upskilling programs for technical staff and reskilling for non-technical employees transitioning into AI-related roles.One employee reflected, "*Reskilling training made me more confident in transitioning from an administrative role to a data analyst position*" (I4, 2025). The company collaborates with universities and digital platforms to ensure training relevance "*Collaboration with universities and digital platforms makes the training content more relevant and applicable*" (I2, 2025).

Interviews and observations indicate that both programs have increased employee adaptability, confidence, and perceived value within the organization. "*After completing the upskilling program, I feel more productive and more valued by the company*" (I3, 2025). Overall, these initiatives form a strategic foundation for integrating AI competencies across the workforce.

Upskilling and Reskilling Strategies in Responding to AI Transformation

Table 3. Upskilling and Reskilling Strategies in Response to AI Transformation

Aspect	Key Findings
Main HR Programs	Upskilling (enhancing technical competencies) and Reskilling (transitioning non-technical competencies to AI-related technical roles)
Training Partners	Technology training institutions, partner universities, and global digital platforms
Implementation	Digital module-based training, hands-on practice, internal mentoring
Impact	Increases employee adaptability, expands technical skills, strengthens readiness for AI-driven transformation

Source: Primary Data, 2025

Findings reveal that XYZ Startup's upskilling and reskilling initiatives follow a blended model emphasizing both technical mastery and adaptive learning. Training incorporates digital modules, simulations, and mentoring to contextualize AI applications. "*We find this upskilling program extremely helpful because it provides a practical understanding of how AI technology is applied in daily work*" (I3, 2025). This approach resonates with (Dantes et al., 2019), who emphasized that e-learning and digital training platforms can act as effective learning agents when combined with structured evaluation, ensuring that training outcomes translate into sustainable competency improvements.

Reskilling supports non-technical employees through gradual learning combining online and in-person sessions. As noted by a participant, "*It was challenging at first, but with guidance from internal mentors and easily accessible materials, we became more capable of adapting*" (I4, 2025). Thematic analysis highlights that managerial alignment, practical content, and mentor availability are crucial for

successful skill transformation. "*We ensure that each training module aligns with the company's operational needs*" (I1, 2025). Consequently, these strategies successfully bridge employee needs and organizational objectives. This resonates with findings by (Yulianthini et al., 2021), who highlighted that organizational adaptability and strategic responsiveness enhance overall performance in dynamic environments.

Challenges in Implementing Upskilling and Reskilling Programs

Table 4. Challenges in Implementing Upskilling and Reskilling Programs

Challenge Aspect	Description
Budget Constraints	Limited budget forces the company to prioritize which competencies to train
Employee Resistance	Some employees are hesitant to participate, perceiving training as an additional burden
Competency Gaps	Differences in employees' backgrounds create uneven learning adaptation
Limited Facilitators	Internal training facilitators are insufficient, increasing reliance on external partners
Integration with Operations	Training schedules often conflict with daily operational workloads

Source: Primary Data, 2025

Despite success, implementation faces five recurring challenges: (1) limited training budgets, (2) employee resistance, (3) uneven competencies, (4) facilitator shortages, and (5) operational conflicts. As one HR manager stated, "*We have to be selective because the training budget cannot cover all competency needs at once*" (I1, 2025).

Resistance is often psychological "*At first I found the training demanding because it extended my working hours*" (I3, 2025) indicating the need for clearer communication about long-term benefits. Differences in prior knowledge also affect learning speed, requiring inclusive teaching methods. "*Some colleagues can master the material immediately, while I need more time to understand AI concepts*" (I4, 2025). Scheduling flexibility and adequate facilitator support emerge as central to maintaining engagement and minimizing operational disruption.

Supporting Factors in the Implementation of Upskilling and Reskilling Programs

Table 5. Supporting Factors for Implementing Upskilling and Reskilling Programs at XYZ Startup

No	Supporting Factor	Description
1	Management Support	Commitment from top management in providing budget, policies, and strategic direction for HR development
2	Strategic Training Partners	Collaboration with technology training institutions, universities, and global digital platforms
3	Digital Infrastructure	Utilization of online learning systems, interactive modules, and AI-based tools

No	Supporting Factor	Description
4	Employee Readiness	Employee enthusiasm for training and awareness of the importance of new competencies
5	Program Evaluation and Monitoring	Regular evaluation mechanisms of program effectiveness through surveys and performance observation

Source: Primary Data, 2025

The most influential enabler is strong management support, ensuring adequate resources and strategic alignment. Management commitment serves as a foundational element, ensuring the programs' sustainability. This is consistent with (Suharsono, 2018), who emphasized that performance-based strategic and operational management models enhance institutional effectiveness, ensuring that human resource development initiatives remain aligned with organizational objectives. Moreover, management ensures that training is not merely formalistic but is directed toward generating tangible improvements in employee performance. Dedicated time for employees to participate in training without disrupting daily productivity reinforces this approach. "*The company leadership strongly encourages us to learn new technologies, even providing dedicated time so training does not interfere with our main tasks*" (I1, 2025).

Partnerships with universities and digital platforms further enhance the learning ecosystem by providing relevant and up-to-date modules "We feel fortunate to learn directly from trainers from partner universities, as the material is highly practical and relevant" (I3, 2025). Additionally, digital platforms enable flexible access, accommodating various learning paces "*I can learn anytime via the platform provided, so I am not bound by office hours*" (I4, 2025).

Program evaluations through surveys and post-training reviews allow continuous improvement. "*After completing training, we are asked to discuss with supervisors what can be applied in our work*" (I2, 2025). Collectively, these factors form an integrated system sustaining the company's digital transformation goals.

Managers and Employees Perceptions of Program Effectiveness

Table 6. Managers' and Employees' Perceptions of the Effectiveness of Upskilling and Reskilling Programs

Informant Code	Informant Status	Program Perception	Impact on Competencies	Challenges Faced
I1	HR Manager	The program helps align employee competencies with AI technology	Enhances data analysis and AI-based decision-making skills	Requires module adjustments for each division
I2	Line Manager	Program is effective in reducing competency gaps	Employees adapt more quickly to AI tools in their units	Training schedules sometimes conflict with operational activities
I3	Employee	Upskilling improves	Able to use AI	Some materials

Informant Code	Informant Status	Program Perception	Impact on Competencies	Challenges Faced
	A	technical AI skills	software independently	are too theoretical
I4	Employee B	Reskilling facilitates role transitions from non-technical to technical	Understands AI-driven and automated workflows	Requires more intensive guidance initially
I5	Employee C	Training positively impacts daily performance	Increases productivity and accuracy	Some materials are still difficult to apply directly

The study findings indicate that managers perceive the upskilling and reskilling programs as highly effective. The HR manager emphasized that the programs help align employees' competencies with the company's AI technology requirements. *"This program is crucial for employees to keep pace with AI developments and avoid falling behind in their competencies"* (I1, 2025). Similarly, line managers recognized improvements in employees' ability to use AI tools within their respective units. Program effectiveness is reflected in employees' rapid adaptation to new work processes, although challenges mainly relate to scheduling training sessions to fit operational demands.

From the employees' perspective, participation in upskilling programs strengthened their technical skills and AI knowledge. Employee A noted that the training enabled greater independence in using AI tools: *"Previously, I struggled with operating AI software, but after the training, I can perform data analysis on my own"* (I3, 2025). Employee B, who underwent reskilling, highlighted that the role transition became easier and more structured. This indicates that reskilling supports employees in adapting to AI-driven job requirements, although some materials require more intensive guidance at the initial stage.

Cross-case analysis revealed a consistent strategy between HR and other business units, focusing on enhancing technical competencies and facilitating employee adaptation to AI. Upskilling programs emphasize mastery of technical skills, whereas reskilling programs focus on transitioning employees from non-technical to technical roles. Employee C reported that the training had a direct impact on productivity and accuracy: *"After the training, my daily tasks are completed faster and with greater accuracy"* (I5, 2025). These insights confirm that AI-based HR development strategies effectively improve employee work quality. This mirrors employees' perceptions that digital learning platforms improved training effectiveness. Effective communication strategies are also essential to ensure employee engagement in training programs. (Putra et al., 2021) emphasized that promotional mix elements, particularly publicity, significantly influence decision-making, suggesting that well-designed communication and publicity efforts can similarly enhance participation in upskilling and reskilling initiatives.

Overall, the upskilling and reskilling programs at XYZ Startup are regarded as effective by both managers and employees. Observations and document reviews confirm that the training modules align with evolving competency needs driven by AI adoption. The main challenges involve

scheduling training sessions and providing intensive guidance during the initial phase. The synthesis of findings demonstrates that program success depends not only on the content but also on managerial support and employees' willingness to learn. Therefore, this competency development strategy serves as a model for adapting human resources to technological change in startup environments.

Summary of Key Findings

Synthesizing across themes, the study finds that upskilling and reskilling at XYZ Startup effectively enhance workforce adaptability, operational efficiency, and AI competency alignment. However, financial, psychological, and structural barriers remain. The integration of managerial support, strategic partnerships, and digital learning tools emerges as the core success mechanism. In direct response to the research questions, results confirm that:

1. Upskilling and reskilling strategies significantly contribute to human resource quality improvement.
2. Program effectiveness depends on organizational culture, leadership engagement, and infrastructure readiness.
3. The sustainability of AI transformation requires continuous competency renewal through structured learning ecosystems.

The Role of AI in Skilling, Upskilling, and Reskilling

Artificial Intelligence (AI) plays a pivotal role in facilitating the processes of skilling, upskilling, and reskilling in the modern workforce. Through its capabilities in big data analytics and personalized learning, AI enables organizations to align employee competencies with dynamic market demands. Personalized and adaptive learning platforms, such as Absorb Skills, demonstrate how AI can tailor training pathways to individual needs (Tariq, 2024). Furthermore, AI assists in identifying skill gaps, optimizing training allocation, and enhancing learning relevance through simulation-based and virtual reality (VR) environments like Virti, which support the development of both technical and soft skills.

Empirical evidence reinforces this transformation. Studies by (Morandini et al., 2023) and (Ramachandran et al., 2024) show that AI-driven training designs, when customized to individual learning profiles, enhance productivity and engagement. Similarly, (Zhang & Li, 2023) found that adaptive learning systems using AI provide real-time feedback, improving learner motivation and retention. (Gupta & Sharma, 2022) further highlight that AI-based predictive analytics allow organizations to anticipate future skill requirements, supporting proactive human resource planning.

In addition, (Hernández et al., 2024) demonstrate that immersive simulations foster critical thinking and problem-solving skills essential in digital industries. Ethical considerations are also central; (Johnson, 2025) emphasizes transparency and fairness in AI-based training to prevent inequitable access. Collectively, these studies underscore AI's transformative influence on human

resource development. Its ability to personalize, predict, and ethically guide learning trajectories establishes AI as an indispensable enabler of workforce adaptability in the digital era.

Implementation Insights from Startup XYZ

The application of AI in workforce development at Startup XYZ illustrates how small-to-medium enterprises can operationalize these concepts. The company implements targeted upskilling for technical employees and reskilling for non-technical staff transitioning into AI-related roles. Training modules combine digital courses, hands-on practice, and internal mentorship, supplemented by academic and industry collaborations (I1; I3; I4, 2025). This hybrid approach ensures that learning outcomes are both practical and aligned with organizational goals.

In line with global reports, AI-related competencies are becoming indispensable. The (Consortium, 2025) notes that nearly 80% of IT roles now require AI proficiency, particularly in large language models, generative AI, and AI ethics. However, a shortage of skilled professionals remains a global challenge. (Deloitte, 2024) suggests that organizations must cultivate a balance between technical and interpersonal skills to sustain long-term transformation an idea reflected in XYZ's internal training philosophy. Similarly, (PwC, 2024) indicates that a lack of AI talent is one of the most significant barriers to innovation, while the (Forum, 2025a) predicts that nearly half of all professional skills will evolve by 2030, demanding ongoing learning initiatives.

The experience of Startup XYZ also illustrates the human side of AI integration. By reskilling non-technical employees into AI-oriented positions, the firm not only enhances technical capabilities but also promotes job satisfaction and career progression. This finding aligns with research from (Review, 2024), which shows that organizations tying reskilling programs to clear career pathways report higher engagement levels. Nevertheless, it is important to recognize potential biases arising from XYZ's limited company size and context; larger organizations with complex hierarchies may face different challenges in scaling AI-driven learning. Therefore, while Startup XYZ serves as an effective microcosm, its outcomes may not be fully generalizable across all industry sectors.

Global Comparisons and Success Factors

Globally, successful AI-based workforce programs depend on multiple interrelated factors: leadership support, collaboration with training partners, adequate digital infrastructure, employee readiness, and structured evaluation. (Djajadi, 2024) demonstrated measurable competency gains following AI-based training interventions, with average post-test scores improving significantly. Similarly, (Setyaningsih & Putri, 2025) found that AI integration contributes meaningfully to learning satisfaction and perceived program quality.

Leadership commitment and organizational culture emerge as critical enablers. (Forum, 2025a) reports that over half of global employees will require reskilling by 2027, and organizations with proactive strategies show greater resilience to automation-related disruptions. According to (A.R.

& Shemluck, 2023), firms employing AI-driven learning management systems experience up to 32% higher engagement compared to traditional approaches. These findings suggest that sustained top management involvement and a supportive learning environment amplify AI's effectiveness in workforce development.

Employee motivation also plays a decisive role. (Lee & Chen, 2023) observed that personalized AI-based programs increase confidence and adaptability, reducing resistance to technological change. Furthermore, (Company, 2024) emphasizes collaboration with academic and industrial partners to bridge skill gaps induced by automation. These collective insights indicate that AI is most effective when integrated within an ecosystem that includes continuous learning, mentorship, and institutional support.

Success Factors

The success of AI-based HR development programs is strongly influenced by a combination of internal and external factors. These include top management support, collaboration with strategic training partners, adequate digital infrastructure, employee readiness to adapt to technology, and structured evaluation and monitoring systems. Research by (Djajadi, 2024) shows that AI-based training can significantly improve participant competencies, with average pre-test scores increasing from 65.48 to 85.20 after training. Moreover, positive perceptions of AI program effectiveness were found in a study by (Setyaningsih & Putri, 2025), highlighting AI's significant contribution to the student learning process.

The literature further emphasizes that organizational culture and leadership commitment play a central role in ensuring successful upskilling and reskilling initiatives. According to (Forum, 2025b), over 50% of employees worldwide will require reskilling by 2027 due to rapid AI adoption, and organizations with proactive training strategies are more resilient to technological disruptions. Similarly, (A.R. & Shemluck, 2023) notes that organizations integrating AI-based learning management systems show a 32% higher employee engagement rate compared to those relying on traditional training methods.

Another critical factor is employee motivation and willingness to engage in lifelong learning. A study by (Lee & Chen, 2023) reveals that personalized AI-driven training significantly boosts employee confidence and adaptability, thereby reducing resistance to change. In addition, (Company, 2024) identifies collaboration with educational institutions and industry partners as an essential driver to address the skill gaps created by automation and AI transformation.

Despite these opportunities, challenges remain significant. A (Pearson, 2025) report reveals that Australia loses $104 billion annually due to inefficient career transitions and lack of reskilling to cope with technological changes. The report warns that 26% of jobs are at high risk without AI upskilling, and automation is expected to disrupt 30% of jobs within five years. However, workers who reskill in AI can expect an 8–12% salary increase within two years. This aligns with the findings of (PwC, 2023), which show that individuals completing AI-related certifications increase their employability by up to 40% in the digital job market. Overall, the interplay of strong management support, advanced digital infrastructure, structured training programs, and

employee readiness, supported by empirical evidence from global institutions, indicates that AI-based HR development can be a transformative strategy for enhancing human resource quality.

Although these success factors worked effectively within Startup XYZ, their scalability to larger organizations may require structural adjustments. For instance, direct managerial involvement in every training process may be unrealistic in firms with thousands of employees. However, the collaborative model with universities and digital platforms observed in this case can serve as a replicable framework for organizations of different scales.

Challenges and Critical Reflections

Despite its promise, implementing AI-driven training presents significant challenges. Financial constraints, employee resistance, scheduling conflicts, and limited internal facilitators remain recurring barriers (Hasan et al., 2024; Yazdani & Wells, 2018). Resistance often stems from uncertainty or fear of redundancy (Prasad, 2025), while inadequate instructional capacity hinders the contextual relevance of training (Metarini & Rusilowati, 2023). Empirical data from (TalentLMS, 2024) indicate that nearly 30% of employees cite time conflicts as a major barrier to participating in training programs.

Additionally, the (Pearson, 2025) report reveals that Australia loses over $100 billion annually due to inefficient career transitions and insufficient AI reskilling, with 26% of jobs at high risk of automation. Workers who successfully reskill, however, experience 8–12% salary growth within two years corroborated by (PwC, 2023), which found a 40% increase in employability following AI-related certification.

While these findings affirm the strategic importance of AI-driven reskilling, they also highlight inequalities in access and readiness across sectors. Startups and SMEs may face disproportionate constraints compared to larger corporations with greater digital resources. Therefore, future programs should emphasize equitable access, adaptive funding mechanisms, and context-specific implementation models to ensure that AI-based workforce development benefits all segments of society.

CONCLUSION

This study concludes that the upskilling and reskilling strategies implemented at Startup XYZ have effectively enhanced workforce quality in the context of artificial intelligence (AI)-driven transformation. The initiatives not only improved employees' technical competencies but also enabled career mobility from non-technical to AI-related roles, thereby aligning the workforce with the evolving demands of the digital economy. The success of these programs is largely attributed to strong leadership commitment, collaboration with training partners, and the establishment of an interactive digital learning infrastructure. Collectively, these factors fostered a culture of adaptability, continuous learning, and innovation within the organization. However, the study also recognizes persisting challenges such as financial limitations, employee resistance, skill mismatches, and limited internal facilitation capacity. These constraints highlight that

effective AI-based workforce development requires not only technological readiness but also organizational change management and sustained leadership engagement. Thus, the case of Startup XYZ demonstrates that a balanced integration of technical and human-centered strategies is essential for achieving sustainable digital transformation.

From a practical standpoint, companies are encouraged to develop adaptive learning ecosystems that integrate external partnerships, motivational reinforcement, and flexible training frameworks. Theoretically, the findings contribute to the growing discourse on AI-enabled human resource development by emphasizing the dual necessity of digital competence and human adaptability. Looking forward, future studies should explore cross-sector and cross-country comparisons to generalize the effectiveness of AI-based upskilling and reskilling strategies. Moreover, incorporating quantitative analyses could provide deeper insights into the measurable impact of these programs on productivity, innovation, and employee retention. At the policy level, governments and educational institutions may also draw on these findings to design inclusive AI training initiatives that bridge digital skill gaps across industries and workforce segments.

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